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EXAMINER	
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2894	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/581,819	ZAKEL ET AL.
	Examiner	Art Unit
	DUY T. NGUYEN	2894

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *6/2/06 &, 5/11/09* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

1. Acknowledgement is made of the amendment received 5/11/09. Claims 1-3, and 5-23 are pending in this application. Claim 4 is canceled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US 5,250,469, from hereinafter "Tanaka") in view of Nakata et al. (US 5,617,441, from hereinafter "Nakata").

Regarding claim 1, Tanaka teaches, Figs. 3 and 4, a method for alternately contacting two wafer-like component composite arrangements, comprising:

-bringing the two component composite arrangements (Fig. 4) each provided with contact metallizations (bumps 3, and pads 8) *(col. 3, lines 46-47, and col. 5, line 29*) on their opposing contact surfaces, are brought into a coverage position with their contact metallizations (3, 8) to form contact pairs (Fig. 3), in which position the contact metallizations (3, 8) to be joined together are pressed against one another,

-the contact metallizations (3, 8) being thereby contacted by exposing the rear of one of the component composite arrangements to laser radiation (YAG laser or gas laser) *(col. 4, lines 57-58),*

-whereby the wavelength of the laser radiation (irradiation beam) is selected as a function of the degree of absorption of the component composite arrangement (Fig. 3) exposed to laser radiation at the rear, so that transmission of the laser radiation through the component composite arrangement (Fig. 3) exposed to the laser radiation at the rear is essentially suppressed or absorption of the laser radiation takes place essentially in the contact metallizations (3, 8) of one or both component composite arrangements (Figs. 3 and 4).

Tanaka fails to teach wherein the laser treatment is performed by mean of a composite arrangement of a plurality of diode lasers which are activated individually or in group to emit laser radiation such that all the contact pair or those combined into group are exposed to lasers radiation for the contacting.

Nakata teaches a composite arrangement of a plurality of diode lasers (laser beam irradiation apparatus) (col. 1, lines 16-17) which are activated individually or in group to emit laser radiation *(col. 1, lines 44-47 and col. 2, lines 18-21*).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a composite arrangement of a plurality of diode lasers as taught by Nakata in Tanaka’s method so that to expose the contact pairs or those combined into groups to laser radiation for the contacting, because Nakata teaches an laser irradiating apparatus using diodes in which each diode can be monitored and controlled to irradiate a plurality of light beams (*col. 2, lines 18-21*). In addition, Nakata teaches an improvement of the laser irradiating apparatus in comparison with the Prior Art's YAG laser welding (similar to the teaching of Tanaka). Therefore, one of ordinary skill in the art would be able to take

advantage of using the laser irradiating apparatus to contact formation of the two wafer-like resulting in increasing the speed rate (*col. 2, lines 8-21*).

Regarding claims 2 and 3, in the combination, Tanaka teaches, as shown in Figs. 3 and 4, c*ol. 1, lines 5-15, col. 4, lines 14-52, and col. 5, lines 14-52*, the substrate material (transparent layer 5, 12) of the component composite arrangement (12) that is exposed to laser radiation (irradiation beam) at the rear is selected so that there is transmission of the laser radiation (irradiation beam) through the component composite arrangement (12) exposed to the laser radiation at the rear and there is absorption (4) of the laser radiation (irradiation beam) in the contact metallizations (3) of the component composite arrangement (12) exposed to laser radiation (irradiation beam) at the rear (*as recited in claim 2);* and in the contact metallizations (8) belonging to the opposing component composite arrangement (7), these contact metallizations (8) having a larger surface area in comparison with the contact metallizations (3) of the component composite arrangement (12) exposed to laser radiation at the rear (*as recited in claim 3*).

Regarding claim 6, in the combination, Tanaka fails to teach the diode laser composite arrangement is designed as a diode laser matrix arrangement, whereby the diode lasers are activated in their totality or only to the extent of a partial matrix according to the size of the component composite arrangement exposed to laser radiation at the rear.

Nakata teaches, as shown in Fig. 26, the light source units are arranged in a matrix form, and the diode lasers are activated in their totality or only to the extent of a partial matrix according to the size of the component composite arrangement exposed to laser radiation at the rear (*see abstract and col. 8, lines 31-44*).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the matrix form of the light source unit and the laser diodes as taught by Nakata in combination with Tanaka to expose the component composite arrangement to laser radiation at the rear, because it aids in decreasing the cost and facilitate the position adjustment and maintenance (*col. 21, lines 43-48*).

Regarding claim 7, in the combination, Tanaka fail to explicitly teach reference temperature is measured in an intermediate space formed by the distance, the measurement being performed by a transmission device through which the laser radiation passes; Tanaka does teach the heating and melting irradiation beam system that provides the irradiation beam having high thermal energy and properly heats the bumps for contacting the IC chip to a substrate (*see col. 4, lines 43-62*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to be able to manually or automatically measure the temperature and control the laser system, because it aids in avoiding any damages to the wafers due to high temperature or temperature differences during the bonding process.

Regarding claim 8, in the combination, Tanaka teaches, as shown in Figs. 3 and 4, for alignment of the contact metallizations in a coverage position to form the contact pairs (3, 8), the component composite arrangement (12) (col. 5, line 37) opposite the component composite arrangement (7) (col. 5, lines 26) exposed to laser radiation (YAG laser), modified by Nakata’s laser irradiating apparatus, at the rear being position by means of a positioning device (IC holder) (*col. 3, lines 5-11*) which acts biaxial and in parallel to the plane of extent.

3. Claim 5 is rejected under Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as modified by Nakata and further in view of Lutz (US Patent 6,762,072).

The teachings of Tanaka/Nakata have been discussed above.

Regarding claim 5, in the combination, Tanaka fails to teach the diode laser composite arrangement is designed as a diode laser linear arrangement which is arranged at a distance below the component composite arrangement which is exposed to laser radiation at the rear.

Nakata teaches, as shown in Fig. 26, *col. 4, lines 54-65, and col. 8, lines 31-44*, the diode laser composite arrangement is designed as a diode laser linear arrangement.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the diode laser composite arrangement as taught by Nakata in combination with Tanaka so that to arrange at a distance below the component composite arrangement which is exposed to laser radiation at the rear, because it aids in increasing the speed rate by irradiating a plurality of laser beams *(col. 2, lines 18-21)*.

However, Tanaka/Nakata fail to teach the diode laser linear arrangement is moved in at least one axis and in parallel to the plane of extent of the component composite arrangement.

Lutz teaches, as shown in Fig. 5, *col. 5, lines 4-6, and cols. 7-8*, the composite arrangement (box 42 provides an x-y stage to move the wafer) is moved in at least on axis and in parallel with the diode laser (layer beam 41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching of Lutz in combination with Tanaka/Nakata to move the

diode laser or the composite arrangement in at least one axis and in a parallel plane, because it aids in ensuring that the localized laser energy of the laser beam is projected on the entire perimeter of the bond frame which results in protecting against external interference during operation of an MEMS structure (*col. 1, lines 19-21* and *col. 7, lines 67, and col. 8, lines 1-2*).

4. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka in view of Nakata and Lutz.

Regarding claim 9, in the combination, Tanaka teaches, as shown in Fig. 4, a device for alternately contacting two wafer-like component composite arrangements comprising:

-first composite arrangement on a transparent panel (12),

-having a holding clamp (IC holder) (*col. 3, lines 5-11*) for receiving a second component composite arrangement (IC chip 7) such that contact surfaces of the first and the second component composite arrangements (Fig. 4) provided with contact metallizations (3, 8) are arranged opposite one another.

Tanaka fails to teach a diode laser composite arrangement.

Nakata teaches a diode laser composite arrangement Fig. 26, *col. 4, lines 54-65, and col. 8, lines 31-44*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the diode laser composite arrangement as taught by Nakata in combination with Tanaka so that to separate from the first component composite arrangement by a transparent component, because it aids in increasing the speed rate by irradiating a plurality of laser beams *(col. 2, lines 18-21)*.

However, Tanaka/Nakata fail to teach

-a receiving frame for supporting and holding a first component composite arrangement on a transparent panel arranged in the receiving frame,

-having a positioning device for relative positioning of the component composite arrangements such that the contact metallizations to be joined together form contact pairs, and

-having a pressure device for generating a contact pressure between the contact metallizations of the contact pairs.

Lutz teaches, as shown in Fig. 5,

-a receiving frame (holder) (col. 2, lines 66-67 and col. 5, lines 25-31) (boxes 31 and 32) for supporting and holding a first component composite arrangement (wafer 11 and cap 14) (col. 5, line 25) on a transparent panel arranged in the receiving frame,

-having a positioning device (alignment unit) (col. 8, lines 20-23) for relative positioning of the component composite arrangements such that the contact metallizations to be joined together form contact pairs, and

-having a pressure device (box 33) (col. 7, lines 42-45) for generating a contact pressure (mechanical pressure) between the contact metallizations of the contact pairs.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ and modify the teaching as taught by Lutz in combination with Tanaka/Nakata to have a receiving frame having a diode laser composite arrangement, a holding clamp, a positioning device and a pressure device in order to support, hold, and contact the wafer-like component composite arrangements because it aids in ensuring that the localized laser energy of the laser beam is projected on the entire perimeter of the bond

frame which results in protecting against external interference during operation of an MEMS structure (*col. 1, lines 19-21* and *col. 7, lines 67, and col. 8, lines 1-2*).

Regarding claim 10, Tanaka/Lutz fail to teach the diode laser composite arrangement is designed as a diode laser linear arrangement having a plurality of diode lasers arranged in a row which diode lasers are arranged on a diode laser mount that can be moved across the alignment of the row and in parallel to the plane of extent of the component composite arrangement.

Nakata teaches, as shown in Fig. 2, col. 4, lines 54-65, and col. 8, lines 31-44, the diode laser composite arrangement is designed as a diode laser linear arrangement having a plurality of diode laser arrange in a row.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the diode laser composite arrangement as taught by Nakata in combination with Tanaka/Lutz to have a diode laser linear arrangement having a plurality of diode laser arrange in a row, because it aids in increasing the speed rate by irradiating a plurality of laser beams *(col. 2, lines 18-21)*.

Although, Tanaka/Nakata/Lutz fail to explicitly teach the diode laser are arranged on diode laser mount that can be moved across the alignment of the row and in parallel to the plane of extent of the component composite arrangement; Lutz does teach an infrared transmission alignment method and box 40 provides an x-y stage to move the wafer relative to the laser scanner or Laser Beam either remain immobile or simultaneously move (see col. 5, lines 5-6, 15-16, col. 7, lines 66-67, and col. 8, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Lutz in order to move the diode laser in

parallel with the plane of extent of the composite arrangement, because by moving either the diode laser or the component composite arrangement, it can be sure that the localized laser energy of the laser beam is projected on the entire perimeter of the bond frame (*col. 7 line 67, col. 8, lines 1-2).*

Regarding claim 11, referred claim 10 discussion for the diode laser linear arrangement that can be moved in parallel to the plane of extent of the component composite arrangement, Tanaka teaches, a shown in Fig. 3, a function of the distance to be traversed can be activated for acting upon a circular contact surface (6A) of the component composite arrangement (bottom part of Fig. 3).

However, Tanaka/Lutz fail to teach the diode lasers of the diode laser linear arrangement can be activated individually or in groups.

Nakata teaches, as shown in Figs. 2 and 20, a multi beam irradiating light source unit (110) having a plurality of diode lasers (101) which are activated individually or in group to emit laser radiation (as cited in claim 11) (see col. 4, lines 54-65, and col. 8, lines 31-44); and the diode laser composite arrangement is designed as a diode laser matrix arrangement having a plurality of laser diode each arranged in rows and columns (as cited in claim 12) (see abstract and col. 18, lines 24-30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the laser source unit having a plurality of laser diodes in which the each of the laser diodes can be turned on/off to emit laser radiation and the matrix arrangement as taught by Nakata into Tanaka/Lutz so that only the diode lasers of the diode laser linear arrangement which are needed for coverage of the respective transverse extent of the contact surface of the component composite arrangement as a function of the

distance to be traversed can be activated for acting upon a circular contact surface of the component composite arrangement, because it aids in increasing the speed rate by irradiating a plurality of laser beams and decrease the cost and facilitate the position adjustment and maintenance *(col. 2, lines 18-21).*

Regarding claim 12, Tanaka/Lutz fail to teach the diode laser composite arrangement is designed as a diode laser matrix arrangement having a plurality of diode lasers each arranged in rows and columns.

Nakata teaches, a shown in Fig. 26, *col. 4, lines 54-65, and col. 8, lines 31-44*, the diode laser composite arrangement is designed as a diode laser matrix arrangement having a plurality of diode lasers each arranged in rows and columns.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the diode laser composite arrangement as taught by Nakata in combination with Tanaka/Lutz to have a diode laser matrix arrangement, because it aids in increasing the speed rate by irradiating a plurality of laser beams *(col. 2, lines 18-21).*

Regarding claim 13, Tanaka/Lutz fail to teach the diode lasers of the diode laser matrix arrangement can be activated individually or in groups such that with a coaxial alignment of the surface midpoints of the contact surface of the component composite arrangement and of the matrix surface for acting upon the circular contact surface, the diode lasers can be activated according to the size of the contact surface either in a totality or only to the extent of a partial matrix required for coverage of the contact surface.

Nakata teaches, as shown in Figs. 2 and 26, the diode laser (101) of the diode laser matrix arrangement, and the diode laser can be activated by individually or group (see abstract, col. 4, lines 54-65, and col. 8, lines 31-44, col. 18, lines 24-30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the use of the diode laser and its operation function as taught by Nakata in order to active the diode laser according to the size of the contact surface either in a totality or only to the extent of a partial matrix required for coverage of the contact surface. As a result, the cost and the time decrease, since the laser radiation can be concentrated on a particular area or whole area of the contact surface.

Regarding claim 14, referred claim 13 for the diode laser composite arrangement, Tanaka teaches, as shown in Fig. 3, col. 4, lines 43-62, the irradiation beam system provides a high thermal energy from below (a distance is formed) a transparent coating layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching a taught by Tanaka to control the high thermal energy provided by the irradiation beam system. For controlling the low and high energy, a measure or sensing device must be applied and/or built in the laser system, since it is know in the art to one when working on a high thermal process, especially in the semiconductor fabrication process. As the result, any damages may occur to the wafers during the thermal process can be avoided.

Regarding claim 15, in the combination, Tanaka teaches, Fig. 4, for alignment of the contact metallizations in a coverage position to form the contact pairs (3, 8) *(col. 3, lines 46-47, and col. 5, line 29*), the component composite arrangement (12) (col. 5, line 37) opposite the component composite arrangement (7) (col. 5, line 26) that is exposed to laser radiation (Fig. 4) at the rear.

However, Tanaka/Nakata fail to teach a positioning device that can be moved in at least two axes.

Lutz teaches a positioning device that can be moved in at least two axes (col. 8, lines 20-23).

it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a positioning device as taught by Lutz in combination with Tanaka/Nakata to arrange the component composite arrangement which is exposed to laser radiation at the rear in a position device because it aids in preventing a MEM device from the environment (see abstract).

5. Clam 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as modified by Nakata/Lutz and further in view of Yasumoto et al. (US 4,612,083, from hereinafter "Yasumoto").

The teachings of Tanaka/Nakata/Lutz have been discussed above.

Regarding claim 16, referred to claim 15 for the positioning device, Tanaka/Nakata/Lutz fails to teach the positioning device is designed to be triaxial such that in addition to a biaxial positioning of the component composite arrangement in the plane of extent of the component composite arrangement, the positioning device serves to execute an adjusting movement across the plane of extent such that the positioning device serves to create the contact pressure.

Yasumoto teach the positioning device (aligned system) is designed to be triaxial (three perpendicular transverse directions) such that in addition to a biaxial positioning of the component composite arrangement (10, 10') in the plane of extent of the component composite arrangement (10, 10'), the positioning device (aligned system) serves to execute

an adjusting movement across the plane of extent such that the positioning device serves to create the contact pressure (*see col. 6, lines 58-68, and col. 7, lines 1-55*).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching as taught by Yasumoto in combination with Tanaka/Nakata/Lutz have a positioning device to be triaxial, because it aids in increasing the fabrication yield of three dimensional semiconductor devices *(col. 13, lines 30-33*).

6. Claims 17, 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka in view of Logsdon et al. (US 2003/0146384, from hereinafter "Logsdon").

The teachings of Tanaka have been discussed above.

Regarding claim 17, Tanaka teaches, a shown in Figs. 3 and 4, a component composite comprising: two wafer-like composite arrangements (Fig. 3) to be contacted alternatively wherein a first transparent component composite arrangement (bottom parts of Fig. 4) comprised of a plurality of cohesively designed transparent cover elements (5, 12) (col. 4, lines 50-51 and col. 5, line 37), and contact metallizations (3, 8) *(col. 3, lines 46-47, and col. 5, line 29*) of the first component composite arrangement and the second component composite arrangement.

However, Tanaka fails to teach a second component composite arrangement comprised of a plurality of cohesively designed sensor units each having at least one sensor each of which is brought into contact with a substrate unit of a sensor unit which is equipped with thought contacts for rear contact access to the sensor unit, wherein contact metallizations are each designed in the formed of a ring, forming, after contacting, a closed sensor receptacle space.

Logsdon teaches, as shown in Fig. 1, a second component composite arrangement comprised of a plurality of cohesively designed sensor units (Fig. 1) each having at least one sensor (sensing device chip 16) [0014] each of which is brought into contact with a substrate unit (chip carrier 12) [0014] of a sensor unit which is equipped with though-contacts (28) [0016] for rear contact access (34, 40) [0018] to the sensor unit, wherein contact metallizations are each designed in the formed of a ring (seal ring 38) [0019], forming, after contacting, a closed sensor receptacle space (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ and modify the teaching as taught by Logsdon in combination with Tanaka so that to have a second component composite arrangement comprised of a plurality of cohesively designed sensor units each having at least one sensor each of which is brought into contact with a substrate unit of a sensor unit which is equipped with thought contacts for rear contact access to the sensor unit, wherein contact metallizations are each designed in the formed of a ring, forming, after contacting, a closed sensor receptacle space because it aids in improving sensitivity and reducing long term drift [0011].

Regarding claim 18, referred claim 17 for the sensor units, Tanaka teaches he oppositely arranged contact metallizations (3, 8) that are brought into contact with one another have a solder material as the contact material (col. 4, lines 39-42).

Regarding claim 23, referred claim 17 for contact metallizations, Logsdon teaches the contact metallizations (38) [0019] surrounding the sensor (16) [0014] in a ring, thereby forming a sealing ring.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ and modify the teaching as taught by Logsdon in combination with

Tanaka to have a contact metallization of the cover units surrounding a sensor in a ring is brought into contact with a contact metallization of the respective sensor unit surrounding the sensor in a ring, thereby forming a sealing ring, because it aids in improving sensitivity and reducing long term drift [0011].

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as modified by Logsdon and further in view of Takezawa et al. (US Patent Pub. 2003/0207073, from hereinafter "Takezawa").

The teachings of Tanaka/Logsdon have been discussed above.

Regarding claim 19, referred claim 17 for contact metallizations, Tanaka/Logsdon fail to teach a conducting adhesive as the contact material.

Takezawa teaches, as shown in Fig. 1, a conducting adhesive as the contact material (see paragraph 0076).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the conducting adhesive as the contacting material as taught by Takezawa, because it aids in enhancing conductivity of the adhesion portion (see abstract).

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as modified by Logsdon and further in view of Lutz.

The teachings of Tanaka/Logsdon have been discussed above.

Regarding claim 20, Tanaka/Logsdon fail to teach at least one group of contact metallizations has an absorption layer consisting of a highly absorbent material as the substrate for the contact material.

Lutz teaches the absorption layer (20) having a high absorption coefficient (see col. 6, lines 28-51).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Lutz in combination with Tanaka/Logsdon in order to form an absorption layer on the contact metallizations, since it contains a high absorption coefficient with respect to the wavelength of laser beam, so that the energy of the laser beam may be easily absorbed.

9. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as modified by Logsdon/Lutz and further in view of Burberry et al. (US Patent 5,858,607, from hereinafter “Burberry”).

The teachings of Tanaka/Logsdon/Lutz have been discussed above.

Regarding claim 21, Tanaka/Logsdon/Lutz fail to teach at least one group of contact metallizations has an absorption layer consisting of a highly absorbent material as the substrate for the contact material.

Burberry teaches an adhesion promoting layers can be interposed between the top layers and the support, or between the top layer and an interposed layer or between the interposed layer and the support (see col. 4, lines 53-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tanaka/Logsdon/Lutz structures with Burberry's teachings in order to form an adhesion promoting layer in between the absorption layer and the contact material because it aids in improving the adhesion characteristic between those layers.

Regarding claim 22, Tanaka/Logsdon/Lutz fail to explicitly teach the absorption layer of the group of contact metallizations assigned to the sensor units has an enlarged surface area in comparison with the contact metallizations of the cover units; Tanaka does teach, as shown in Figs. 3-4, the contact metallizations (8) belonging to the opposing component

composite arrangement (7), these contact metallizations (8) having a larger surface area in comparison with the contact metallizations (3) of the component composite arrangement (12) (also discussed in claim 3 above). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the surface area of the absorption layer taught by Lutz with the teaching of Tanaka to achieve an absorption layer has an enlarger surface area in composition with contact metallizations, because it is favorable to heat not only the metal bumps but also the electrode pads.

Response to Arguments

10. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

11. In response to the applicant's argument on page 17, paragraph 1, "Nakata fails to disclose a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs of the contact metallizations or those contact pairs of the contact metallizations combined into groups are exposed to laser radiation, as recited in amended claim 1". The examiner respectfully disagrees. In the combination, Tanaka teaches a YAG laser system (col. 4, lines 57-58); Nakata does teaches, as shown in Fig. 26, and claim 1 discussion above, an improved laser beam irradiating apparatus (col. 1, lines 15-17) using diodes to irradiate a plurality of light beams (col. 2, lines 18-21) in contrast with the YAG laser (col. 1, lines 60-67) of the Prior Art (taught in Nakata reference). Since Nakata discloses an improvement of the laser beam irradiating apparatus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ and replace laser beam irradiating apparatus using laser diodes as taught by Nakata to perform the contacting process as in the claimed

invention and would results in increasing speed rate, and minimizing defection loss (col. 2, lines 18-32). In addition, a new ground rejection is provided to meet the laminations of the currently amended claims.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DUY T. NGUYEN whose telephone number is (571) 270-7431. The examiner can normally be reached on Monday-Friday, 7:30 Am - 5:00 Pm (alternative Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on (571) 272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DUY T NGUYEN/
Examiner, Art Unit 2894
6/17/09

/THANH V. PHAM/
Primary Examiner, Art Unit 2894